UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,904	03/19/2001	Richard P. Torti	11460-109	7642

26486 7590 08/06/2003

PERKINS, SMITH & COHEN LLP
ONE BEACON STREET
30TH FLOOR
BOSTON, MA 02108

EXAMINER
HASHMI, ZIA R

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/811,904	TORTI ET AL.	
	Examiner	Art Unit	
	Zia R. Hashmi	2881	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4 & 5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-51 are rejected under U.S.C. 103(a) as being unpatentable over Macler (5,767,511), in view of Sheehan et al. (6,278,111).

3. With respect to independent claims 1, 14, 27, 35, and 42, Macler discloses a gas cluster ion beam (Abstract, lines 1-5), detector (col. 2, lines 10-12, col. 13, lines 19-23, and 22,23 in Fig. 1) for measuring the properties of a gas cluster ion beam (col. 1, lines 10-16, col. 4, lines 6-7 & 28-29, and Fig. 3) comprising: an enclosure (31 in Fig. 3) having a first opening where the gas cluster ion beam enters the detector (11 in Fig. 1 and 37 in Fig. 3); a dissociating means located within the enclosure adjacent to the first opening for dissociating cluster ions in the gas cluster ion beam (Abstract, lines 10-15, col. 1, lines 62-66, col. 3, lines 40-43, 13 in Fig. 1, and 36 in Fig. 3); an analyzer for analyzing ionized cluster fragments (col. 3, lines 21-23 & 40-43), and a pressure measuring means for measuring the pressure within the enclosure (col. 6, lines 30-31,15 in Fig. 1, and 38 in Fig. 3). Macler also discloses a gas cluster system comprising a source for producing a gas cluster ion beam of ionized and unionized gas clusters (Abstract, lines 1-5, col. 2, lines 5-12, and col. 3, lines 59-64), and a detector

that measures the properties of the gas cluster ion beam (col. 2, lines 10-12 & 38-46, col. 3, lines 21-23, and col. 4, lines 9-12).

4. With respect to dependent claims 7, 20, 32-33, 42, 47-48, and 50-51, Macler discloses a pressure measuring ionization gauge (col. 3, line 6 and 15 in Fig. 1), and a processing system wherein a detector measures cluster size and determines a mean cluster size (col. 1, lines 10-16, col. 2, lines 10-12, col. 3, lines 20-25, and col. 4, lines 28-29).

5. With respect to claims 1-6, 8-19, 21-31, 34-41, 43-46, and 49, Macler fails to disclose a Faraday type charge measuring means located within the enclosure and in path for collecting the gas cluster ion beam current, with an exit opening. Sheehan et al., however, disclose a Faraday type charge measuring device located within the enclosure of the apparatus, in path of the gas cluster ion beam, with an exit opening (col. 10, lines 33-38 and 34 in Fig. 2). Since Faraday cups or cages are known to have solid collecting electrodes, as well as suppressor electrodes, it follows that a Faraday cup would provide a solid surface on which the gas cluster ions impact and dissociate, and appropriate electrical bias can be applied to suppressor electrode of a Faraday cup to promote accurate collection of gas cluster ion beam current.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to combine the method and apparatus of Macler and Sheehan et al. and add features like a temperature sensor, beam switching means and operably controlling relationship between gas cluster ion beam detector and the gas cluster ion beam, because Macler teaches (col. 2, lines 39-43) that cluster size is a very important

parameter for applications that require cluster deposition, which include the deposition of semiconductor thin films and microstructures, optical coatings, and superconductor thin films, and the like, and in the case of relatively large clusters, such as are used in photographic emulsions and nanoparticle production.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mack et al., disclose methods and apparatus of gas cluster ion beam size diagnostics for determining mass distribution and mass flow of cluster ions.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (703) 305-0419. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (703) 308-4116.

Zia Hashmi

July 10, 2003

JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800